Appendix F:
Cross-Cutting Issues-detailed policy description/analysis

Overview

Some issues considered by the CCAG apply to multiple sectors and are therefore better addressed as "cross-cutting" issues across all sectors rather than assigned to any individual sector. This set includes GHG reduction goals, GHG emissions reporting, GHG emission reduction registries, public education and outreach, and adaptation. The Cross-Cutting Issues TWG developed includes policy options for each of these issues.

The CCAG was not initially charged with establishing GHG reduction goals, or including adaptive responses to climate change (as opposed to GHG mitigation policies), but came to believe that both should be included in this effort. After carefully considering Arizona's elevated growth rate, feasibility of GHG emissions reductions, and goals in other jurisdictions, the CCAG identified a GHG emission reduction goal that it believes is aggressive, yet achievable. In terms of adaptation, any delay in adapting to the climate impacts already affecting Arizona will increase the difficulty of doing so in the future, so the CCAG suggests a comprehensive effort be undertaken to develop policy options to address adaptation.

Three cross-cutting policies create awareness and infrastructure needed to encourage and accomplish broad mitigation actions: 1) a GHG emissions reporting program to better understand mitigation opportunities and measure future progress; 2) a GHG registry to help recognize and share accomplishments and provide "baseline protection" for entities; and 3) public education and outreach to build public awareness of climate change risks and opportunities.

Cross-Cutting Issues Work Group Summary of Results						
#	**Policy Name**	**Estimated 2010 GHG Reductions ($MMtCO_2e$)**	**Estimated 2020 GHG Reductions ($MMtCO_2e$)**	**Estimated Costs or Cost Savings Per Ton ($/tCO_2e$)**	**Cumulative 2007-2020 GHG Reductions ($MMtCO_2e$)**	**Level of CCAG Support**
		Quantification of GHG Reductions and Costs or Savings are not applicable to these options.				
CC-1	State Greenhouse Gas Reduction Goal	*The CCAG recommended a goal of reducing Arizona's GHG emissions to 2000 levels by 2020, with an additional 50% below those levels by 2040.*				Unanimous
CC-2	GHG Reporting	*The CCAG recommended the implementation of a GHG reporting program in Arizona.*				Unanimous
CC-3	GHG Registry	*The CCAG recommended the implementation of a GHG registry in Arizona, preferably in concert with other states.*				Unanimous
CC-4	Public Education and Outreach	*The CCAG recommended that the State undertake concerted climate change education and outreach activities directed toward, but not limited to, several key audiences.*				Unanimous
CC-5	Adaptation	*The CCAG recommended that the Governor consider appointing a task force or advisory group to develop recommendations for a State adaptation strategy.*				Unanimous
Total All Options		**Not Applicable**				

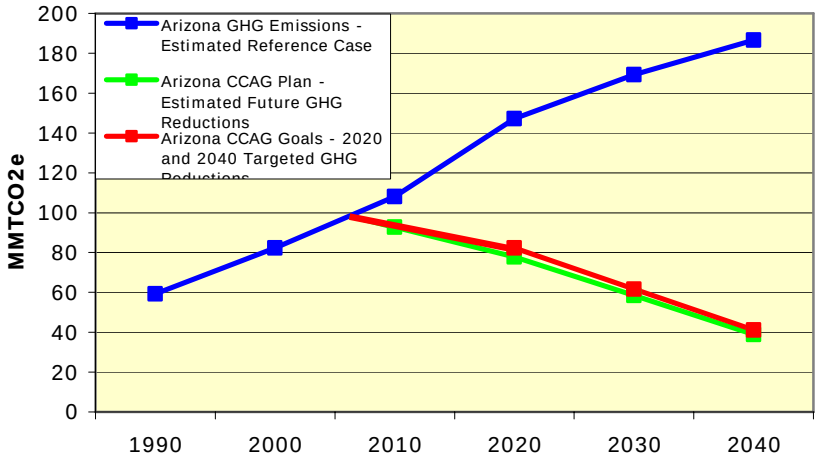
CC-1 State Greenhouse Gas Reduction Goal

Policy Description:

The CCAG recommends that Arizona establish a statewide, economy-wide GHG reduction target to reduce GHG emissions to 2000 levels by 2020, and to an additional 50% reduction below those levels by 2040. In lieu of establishing a specific target for 2010, the CCAG also strongly recommends the early and aggressive implementation of the recommendations in this report, along with a corresponding set of incentives to promote early adoption.

As the reference case forecast in Figure 1 illustrates, Arizona's extraordinary growth in population and economic activity is expected to generate very high percentage growth in carbon emissions compared to other states. Early and aggressive action in Arizona is thus crucial to slowing – and ultimately reversing – the rate of GHG emissions.

Figure 1. 1990-2040 GHG Emissions: Reference Case Forecast, CCAG Goal, and Estimated Cumulative Reductions with CCAG Options



Policy Design:

Not applicable.

Implementation Method(s):

Implementation methods are not applicable to a reduction goal itself, but do apply to the numerous CCAG policy recommendations concerning how the goal is to be achieved, and are detailed under each of those options.

Related Policies/Programs in Place:

No comprehensive, statewide GHG reduction goal is in place in Arizona.

Type(s) of GHG Benefit(s):

Not applicable.

Estimated GHG Savings and Costs per tCO_2e:

Not applicable.

Data Sources, Methods, and Assumptions:

Not applicable.

Key Uncertainties:

Not applicable.

Ancillary Benefits and Costs:

Not applicable.

Feasibility Issues:

None cited.

Status of Group Approval:

Completed.

Level of Group Support:

Unanimous.

Barriers to Consensus:

None cited.

CC-2 Greenhouse Gas Reporting

Policy Description:

Measurement and public reporting of GHG emissions at a statewide, sector, or sub-sector level are important to support tracking and management of emissions. GHG reporting can help sources identify emission reduction opportunities and reduce potential risks associated with possible future GHG mandates by "starting up the learning curve." Tracking and reporting of GHG emissions will also help in the construction of periodic state GHG inventories.

GHG reporting is a key precursor for sources to participate in voluntary GHG reduction programs, opportunities for recognition, a GHG emission reduction registry, and to secure "baseline protection." Further, GHG reporting is an opportunity for the State to influence reporting practices throughout the region and nation, and to build consistency with other reporting programs. Subject to consistently rigorous quantification, GHG reporting should not be constrained to particular sectors, sources, or approaches so as to encourage GHG mitigation activities from all quarters.

Policy Design:

The CCAG recommends implementing a reporting mechanism that includes the following key elements:

- Phasing in mandatory GHG reporting by sectors as rigorous, standardized quantification protocols, base data, and tools become available and responsible parties become clear; allowing for voluntary reporting before mandatory reporting applies; allowing the state itself to be a participant, reporting emissions associated with its own activities and the programs it implements.
- Applying to all source types (e.g., combustion, processes, vehicles, etc.) but using common sense regarding de minimis emissions.
- Having a goal of reporting "organization-wide emissions within Arizona" but doing so with greatest possible "granularity" to facilitate baseline protection (e.g., the "rolling up" of facility and field emissions reports in a reporting database would provide organization totals in Arizona).
- Reporting annually on a calendar year basis for all six traditional GHGs and, to the extent possible, black carbon.

- Requiring reporting of direct emissions, phasing in reporting of indirect emissions associated with purchased power and heat, and allowing voluntary reporting of other indirect emissions.
- Maximizing consistency with other state and federal reporting programs.
- Verifying emissions reports through self-certification and ADEQ spot-checks, and adding third-party verification for registry purposes.
- Allowing for appropriate public transparency of reported emissions, and allowing voluntary project-based emissions reporting when properly quantified.

Other specific design elements of an effective GHG reporting program are noted in the ***GHG Reporting Design Options Matrix*** included below.

Implementation Method(s):

- Reporting

Related Policies/Programs in Place:

No comprehensive, statewide GHG emissions reporting program is in place in Arizona.

Type(s) of GHG Benefit(s):

Not applicable.

Estimated GHG Savings and Costs per tCO_2e:

Not applicable.

Data Sources, Methods, and Assumptions:

Not applicable.

Key Uncertainties:

Not applicable.

Ancillary Benefits and Costs:

Not applicable.

Feasibility Issues:

None cited.

Status of Group Approval:

Completed.

Level of Group Support:

Unanimous.

Barriers to Consensus:

None cited.

WWW.AZCLIMATECHANGE.US

Cross Cutting Issues Technical Working Group
GHG Reporting Design Options Matrix

July 14, 2006

For Reference:

WRI/WBCSD *GHG Protocol*'s
Principles for GHG accounting and reporting:

1. Relevance
2. Completeness
3. Consistency
4. Transparency
5. Accuracy
6. Enable other goals

Potential Goals of GHG Reporting:

1. Identifying reduction opportunities
2. Reducing risks (e.g., start learning curve)
3. Tracking GHG emissions, assisting the state in constructing annual inventories
4. Participating in voluntary programs
5. Participating in – or preparing for – mandatory programs
6. Precursor for registry participation
7. Opportunities for recognition
8. Public reporting
9. Consistency with other programs

	Design Element	Options	Design Considerations	TWG Recommendation
1.	**Type of Program**	• Voluntary • Mandatory	• May need or want to constrain sectors and/or sources (e.g., applicability). • Mandatory GHG reporting for major sources is in place in some states (ME, CT, NJ); anticipated soon for several others in Northeast and Far West.	• Mandatory when (a) standard quantification protocols & tools are available for a sector (to avoid differing protocols over multiple jurisdictions); and (b) responsible parties are clear (e.g., Residential/commercial, Transportation). • "Phase in" mandatory reporting by sector, but allow voluntary reporting by other sectors & sources until they are required to report. • The State may also register GHG reductions from programs.
2.	**Sectors**	• All sectors eligible • Limited to certain sectors	• Participation may be limited by availability of quantification methods; may need to "stage" sector participation. • WRI calculation protocols: Stationary combustion, mobile, Electric power, cement, iron & steel, aluminum, pulp & paper, wood products, lime, ammonia, purchased heat or power, others.	• Include all sectors, but only as quantification protocols and data availability enables equally rigorous treatment across sectors (to provide consistency when ultimately linked to a registry). • Phase In sectors as quantification protocols and data become available.

	Design Element	Options	Design Considerations	TWG Recommendation
3.	**Sources**	• All • Stationary combustion emissions • Mobile combustion emissions • Process emissions • Fugitive emissions	• Could limit sources even within sectors, (e.g., via types, size thresholds, etc.). • Broader array promotes inventory building, public information, identification of GHG strategies, etc.	• Reporting should be open to all sources. • As with sectors, "Phase In" mandatory reporting based on availability of: (a) standard quantification protocols; and (b) adequate base data (e.g., for different fuels, etc.) for specific source types. • For mandatory sources, use common sense regarding diminishing returns (e.g., de minimis emissions, cutpoints, etc.).
4.	**Organi-zational Boundary**	• Entity-wide (e.g., corporation-wide) • Facility • Emissions unit or source point • Other	• Clear definitions needed to avoid double counting where shared ownership exists. • Should strive to have design be consistent with possible future directions (e.g., mandatory reporting would not be enforceable above the facility level). • Combinations are possible (e.g., finer resolution aggregated to a greater whole).	• Reporting goal: "Organization-wide emissions within AZ" with greatest possible "granularity" to facilitate baseline protection. • This generally equates to emissions from in-state facilities, but not all sources may be "facilities." • "Rolled up" total of "facility" and "field" emissions reports in a reporting database would provide total "organization-wide emissions in AZ."

	Design Element	Options	Design Considerations	TWG Recommendation
5.	**Reporting Period**	• Annual - Calendar - Fiscal • Other	• Should strive for consistency with other reporting programs.	• Annual emissions on a calendar year basis.
6.	**Greenhouse Gases Included**	• Six "Kyoto gases" (CO_2, HFCs, CH_4, N_2O, PFCs, SF_6) • Black Carbon (BC)	• Should strive for consistency with other reporting programs. • Broader array promotes inventory building, public information, identification of GHG strategies, etc. • No single, clear global warming potential (GWP) exists for BC.	• Include all six "Kyoto Gases" (emitted above de minimis levels). • Include, or provide a placeholder for, reporting Black Carbon emissions as well.

	Design Element	Options	Design Considerations	TWG Recommendation
7.	**Scope of Emissions Covered**	• Direct - "Scope 1" • Indirect - "Scope 2" - Indirect from purchased Heat & Electricity - "Scope 3" - other indirect (e.g., outsourced activities, employee travel, etc.) • Both	• May need or want to "stage" coverage (e.g., start small & expand). • Direct emissions are most like current reporting requirements, but may omit GHG reduction opportunities or encourage direct-indirect trade-offs. • For many entities, most GHG emissions are from indirect emissions sources.	• Goal: Greatest detail and greatest consistency, applied with common sense (e.g., to emissions above de minimis levels). • Require reporting of direct "Scope 1" emissions ASAP. • "Phase In" required reporting of indirect "Scope 2" emissions, but report them separately for greater transparency. • Allow voluntary reporting of "Scope 3"; phase it in if/when similarly rigorous protocols exist.
8.	**Emissions Quantifi-cation & Monitoring**	• Calculation methods & tools • Direct measurement (e.g., CEMs, Stack Testing)	• Should strive to use current best practice methods, such as *GHG Protocol* calculation tools, and to have consistency with other reporting programs. • Some "other" or "home grown" approaches may be necessary when the *GHG Protocol* is silent (e.g., Flashing emissions; IPIECA, API's SANGEA).	• Develop a "Hierarchy of Consistency," whereby quantification protocols are applied in a priority order (e.g., EPA, IPCC, WRI/WBCSD, IPIECA/API, etc.). • Maximize consistency with existing reporting requirements (e.g., CO_2 reporting for Acid Rain sources should echo current CO_2 reporting to EPA).

	Design Element	Options	Design Considerations	TWG Recommendation
9.	**Verification**	• state verification • [T]Third-party verification • Self-certification	• If mandatory, the State may be able to use current verification procedures for criteria pollutants. • CCAR requires third-party verification.	• For reporting, allow "Self-Certification," and have ADEQ do spot inspections. • For ultimate Registry purposes, have third-party verification.
10.	**Public Access & Reports**	• Internet access and/or Online reports • Paper reports • Both	• "Confidential Business Information" (CBI) concerns	• Allow sources to report GHG emissions electronically. • Provide electronic public access to GHG emissions reporting data that is "rolled up" to a level such that CBI is reasonably protected.
11.	**Project Level Reporting or "Offsets"**	• Yes/No • Constrain	• WRI: Raises quantification, baseline, "additionality," secondary effects, reversibility, and double-counting issues. • Location of co-benefits achieved. • May be most useful when there is an externally-imposed constraint (e.g., a "Cap").	• Primarily useful as a registry function. • Requires accepted project-based quantification tools & protocols (now starting to arrive; e.g., WRI/WBCSD). • Allow for voluntary reporting of properly quantified mitigation projects.

CC-3 Greenhouse Gas Registry

Policy Description:

A GHG registry refers to the measurement and recording of GHG emissions reductions at a macro- or micro-scale level in a central repository with a "transaction ledger" capacity. A GHG registry can support tracking, management, and "ownership" of emission reductions as well as encourage GHG reductions, enable potential recognition, provide baseline protection, and/or crediting of actions by implementing programs and parties in relation to possible emissions reduction goals. Further, it can provide a mechanism for regional, multi-state, and cross-border cooperation. Subject to consistently rigorous quantification, registration of GHG reductions should not be constrained to particular sectors, sources, or approaches in order to encourage GHG mitigation activities from all quarters.

Policy Design:

The CCAG recommends that the State implement a registry mechanism with the following key elements:

- Geographic applicability at least at the statewide level and as broadly (i.e., regionally or nationally) as possible.
- Allowing sources to start as far back chronologically as good data exists, as affirmed by third-party verification, and allowing registration of project-based reductions or "offsets" that are equally rigorously quantified.
- Incorporating adequate safeguards to ensure that reductions aren't double-counted by multiple registry participants; providing appropriate transparency; and allowing the State itself to be a participant, registering GHG reductions associated with its programs, direct activities, or efforts.
- Striving for maximum consistency with other State, regional, and/or national efforts; greatest flexibility as GHG mitigation approaches evolve; and providing guidance to assist participants.

Other specific design elements of an effective GHG registy program are noted in the ***GHG Registry Design Options Matrix*** included below.

Implementation Method(s):

- Registry

Related Policies/Programs in Place:

No comprehensive, State or regional GHG registry is currently in place for Arizona.

Type(s) of GHG Benefit(s):

Not applicable.

Estimated GHG Savings and Costs per tCO_2e:

Not applicable.

Data Sources, Methods, and Assumptions:

Not applicable.

Key Uncertainties:

Not applicable.

Ancillary Benefits and Costs:

Not applicable.

Feasibility Issues:

None cited.

Status of Group Approval:

Completed.

Level of Group Support:

Unanimous.

Barriers to Consensus:

None cited.

WWW.AZCLIMATECHANGE.US

Cross-Cutting Issues Technical Working Group
GHG Registry Design Options Matrix

July 14, 2006

Notes:

- Builds upon GHG Reporting Design Options Matrix
- Some Reporting preferences could be outweighed by Registry preferences (e.g., if a regional registry has different specifications).

Potential Goals of GHG Registry:

1. Recording of GHG reductions (vs. emissions)
2. A central, independent repository for credible info about emissions activities
3. A "transaction ledger" – providing data management & accounting critical for trading (with or without a cap)
4. "Baseline protection" – enabling early action current or future credit for trading
5. An incentive to track & manage emissions, seek productivity and energy efficiency gains, accelerate learning curve regarding competitiveness & carbon markets
6. Enhance public recognition and demonstrate corporate citizenship
7. Possible vehicle for regional, multi-state, & cross-border cooperation

	Design Element	Options	Design Considerations	TWG Recommendation
1.	**Key Design Criteria (beyond *GHG Reporting Design Options Matrix*)**			
	Define geographical boundaries	• Arizona • Regional (or broader)	• Span of control • Cost, economies of scale, & broader = better?	• Statewide at least, but as broad as possible, consistent with best practices • WRAP region may be possible
	Verification	• State verification • Third-party verification	• See *GHG Reporting Design Options Matrix*	• Third-party verification
	Base Year	• Single specified year • Single entity-chosen year • Average of multiple years • Adjustment rules?	• Flexibility vs. Simplicity • Must have good data for Base Year	• Unless otherwise required for a specific purpose, allow entity to choose base year. (This allows entities to go back as far as good data exists.)
	Project-level submittals	• Yes / No / Constrain	• Against what baseline? • Additionality issues (what would have happened anyway?	• Yes, keep as open and flexible as possible, but require third-party verification against solid quantification protocols.
	"Offsets"	• Yes / Some / No	• Co-benefits location? • Nature / character?	• Note: Offsets assume a GHG reduction obligation, and then work in concert with it. • Yes; door should be open to spur others to act and possible regional action.
	Start Date	•	• Establish a "to be in operation" date?	• Mandatory reporting starting in 2008; registry to follow ASAP for sectors/sources as soon as solid quantification protocols exist.
	Ownership	•	• Risk of double-counting	• Must have adequate safeguards and protocols to ensure no double counting. • State is a valid "owner" for GHG reductions achieved as a result of state mandates.

	Design Element	Options	Design Considerations	TWG Recommendation
	Transparency	•	•	• Must have adequate transparency to ensure quality.
	Others?	•	•	• Strive for consistency and compatibility with other similar efforts (as done with Renewable Energy Certificates (RECs)).
2.	**Technical Issues**			
	Treatment of minority ownership	• Equity share • Financial control	• WRI-WBCSD *GHG Protocol*[1] covers both	• Comport with *GHG Protocol*.
	Merger & acquisition issues	• Recalculate base year emissions in event of acquisition or divestment	• *GHG Protocol* covers	• Comport with *GHG Protocol*.
	Quality Assurance; Uncertainty Analysis	• Disclose areas of potential uncertainty	• *GHG Protocol* covers	• Comport with *GHG Protocol*.
	Regulatory guidance (Protocols, guidance documents, etc.)	• Prepare & provide to interested parties	•	• Arizona should prepare & offer reasonable guidance and tools to encourage participation.
	Data flow; filing methods, etc.	• State agency, third-party, etc.	• Confidential business information (CBI), legal authority, etc.	• Retain state authority, ensure adequate data protection, and use web filing to the greatest extent possible.

[1] http://www.ghgprotocol.org/plugins/GHGDOC/details.asp?type=DocDet&ObjectId=MTM3NTc

	Design Element	Options	Design Considerations	TWG Recommendation
3.	**Ancillary, Administrative, & Operational Issues**			
	Location (Agency)	• ADEQ • Other?	• Regional potential	• Within Arizona, ADEQ is probably the best place to house the registry (but adequate resources will be necessary). • If regional, then TDB.
	Software; Web Interface, etc.	• Arizona-specific • CCAR, RGGR, CCX, ERT, EATS? • Other?	• Multiple needs (emissions inventory, allowances, mandatory, voluntary, etc.) • Rapidly changing "state-of-the-art"	• Strive for: (a) consistency with other registry efforts; (b) flexibility to serve both mandatory and voluntary participants & sectors; (c) ability to change as registries evolve; and (d) maximum implementation via web capabilities.
	Cost	• Transaction fee • Publicly supported? • Other?	• Development costs • Ongoing operating costs	• Costs should be borne principally by participants.
	Oversight & Management	• ADEQ • Publicly appointed board • Other?	•	• Either ADEQ or a public board OK; but must maintain current positive momentum. • If regional, then TDB.
	Reporting of Results; Recognition	•	•	• Registry should do outreach with results; provide recognition for participants.

CC-4 State Climate Action Public Education and Outreach

Policy Description:

Public education and outreach is vitally important to foster a broad awareness of climate change issues and effects (including co-benefits, such as clean air and public health) among the State's citizens and to engage them in actions to reduce GHG emissions. Such efforts should seek to integrate with and build upon existing outreach efforts involving climate change and related issues in the State. Ultimately, public education and outreach will be the foundation for the long-term success of all the mitigation actions proposed by the CCAG as well as those which may evolve in the future.

Policy Design:

The CCAG recommends that the State undertake concerted climate change education and outreach activities directed toward, but not limited to, the following audiences:

- Policymakers (e.g., legislators, regulators, executive branch, agencies) – because implementation of climate actions hinges on policymakers' approval.
- Younger Generations – by integrating climate change into educational curricula, post-secondary degree programs, and professional licensing programs.
- Community Leaders and Community-Based Organizations (e.g., businesses, institutions, municipalities, service clubs, social & affinity groups, non-governmental organizations, etc.) – in order to recognize leadership; share success stories and role models; and expand climate involvement and participation within civic society.
- The General Public – to increase awareness and engage citizens in climate actions in their personal and professional lives.

Suggestions for specific activities by audience are noted in the ***Education Options Matrix*** included below.

Implementation Method(s):

- Information and education

Related Policies/Programs in Place:

Several public and private efforts have occurred to raise public consciousness of climate change causes and impacts in Arizona, but no comprehensive overall State climate action public education and outreach program is in place in Arizona.

Type(s) of GHG Benefit(s):

Not applicable.

Estimated GHG Savings and Costs per tCO_2e:

Not applicable.

Data Sources, Methods, and Assumptions:

Not applicable.

Key Uncertainties:

Not applicable.

Ancillary Benefits and Costs:

Not applicable.

Feasibility Issues:

None cited.

Status of Group Approval:

Completed.

Level of Group Support:

Unanimous.

Barriers to Consensus:

None cited.

WWW.AZCLIMATECHANGE.US

Cross-Cutting Issues Technical Working Group
Education Options Matrix

July 14, 2006

Goals of Public Education & Outreach:

1. Overarching goal: Promote awareness about the impacts of climate change, solutions, and co-benefits of action.
2. Education provides a foundation essential for all climate action.
3. Others?

General Approach:

1. "Walk the Talk" in terms of the State's own education and outreach activities, and reach out to the four key audiences below:
   a. Policymakers (legislators, executive, agencies, regulators, etc.)
   b. Community Leaders and Organizations
   c. Younger Generations
   d. The General Public

	Measures & Strategies	Tasks & Examples	Notes & Elaborations
	State Government Actions The State should lead by example (i.e., "walk the talk") regarding education and outreach.		
	Engage higher education instructors in conducting on-going research and communication with students.	• First task: Identify already existing resources & programs. • Identify additional needs and potential funding sources.	• A "two-way street": education officials bring research & info to the body, act as outreach arm for reaching students and others.
	Educate State employees on an on-going basis about climate change and practices to reduce GHG emissions.	•	•
	Target Audience: Policymakers (legislators, regulators, executive branch, agencies) implementation of climate actions hinges on policymakers' approval.		
	Educate policy makers on climate change & CCAG recommendations to promote acceptance and implementation.	• Conduct regular legislative briefings. • Identify & offer agency-specific info on climate issues & opportunities.	• Use input derived from policymaker interactions to develop new mitigation measures going forward.
	Provide continuing outreach & assistance to Governor's office, legislature, and implementing agencies on a regular basis.	• Educate press liaisons from agencies, etc. • Provide regular press releases or updates on reductions, events, etc.	•

	Measures & Strategies	Tasks & Examples	Notes & Elaborations
	Target Audience: Younger Generations Integrate climate change into educational curricula, post-secondary degree programs, and professional Licensing.		
	Integrate "best practices" into public school design & construction to educate students (and parents) first-hand in their communities & colleges (i.e., walk the talk).	• Investigate whether AZ could provide bonding for school districts to fund energy efficient construction. • Include in-building signage & displays to explicitly point out efficiency aspects built in to public buildings.	•
	Promote research into climate change and solutions at State universities.	•	•
	Integrate climate change into existing and/or new educational competition programs (e.g., Envirothon, science fairs, etc.).	•	•
	Work with science centers, zoos, and museums to include a climate science focus appropriate to their core mission.	• A key area for an Outreach Coordinator to focus on.	• Examples exist in other regions (e.g., Clean Air-Cool Planet science center initiative). • Could provide speaking opportunities for teachers; have college professors host forums for high school students on weekends, etc.
	Introduce core competencies on climate change into professional licensing programs (e.g., energy efficiency in building design and construction, use of recycled materials, etc.).	•	•

	Measures & Strategies	Tasks & Examples	Notes & Elaborations
	Target Audience: Community Leaders & Community-Based Organizations (Businesses, institutions, municipalities, service clubs, social & affinity groups, NGOs, etc.) Recognize leadership; share success stories & role models; expand involvement and participation within civic society.		
	Identify individual community leaders who are acting effectively on climate change; showcase and share their successes.	• Enlist/encourage them to be a de facto "Speakers' Bureau." • Host discussion forums featuring them.	• Include all walks of work & life (retail, services, manufacturing, health care, auto, facilities, etc.) • Put examples, guidance, links, contacts, etc. on the web clearinghouse.
	Identify individual community leaders who have not yet acted on climate change and make a special effort to educate them.	•	•
	Engage associations and participate in their meetings periodically to educate them about climate change and sector-specific mitigation actions.	•	•
	Develop statewide recognition program(s) for community leaders and entities.	•	•
	Organize & host outreach events that focus on leading by example, sharing how-to, co-benefits, illuminating financial risks and opportunities, etc.	•	•

	Measures & Strategies	Tasks & Examples	Notes & Elaborations
	Identify, assist, and leverage community-based organizations with expertise or interest in climate-related issues.	• Faith community • Service clubs; sportsmen; recreational/hobbyist groups • Metropolitan planning organizations • environmental, social, & civic advocacy organizations	•
	Work with community-based organizations to identify & build upon climate issues related to their core mission.	• Public health vs. new disease vectors? • Low-income vs additional stressors?	•
	Support and facilitate outreach and education within community-based organizations regarding climate change issues and actions.	• Provide content for websites, newsletters, ListServs? • Coach & assist community Outreach coordinators?	•
	Encourage municipal leaders to join ICLEI's[2] Cities for Climate Protection program and/or the Mayors Climate Protection Agreement[3].	•	•
	Target Audience: General Public Increase awareness and engage citizens in climate actions in their personal and professional lives.		
	Work with state broadcasters and print media associations to develop & run climate change articles and public service announcements.	•	•

[2] ICLEI is the International Council for Local Environmental Initiatives. See www.iclei.org.
[3] See http://www.ci.seattle.wa.us/mayor/climate/.

	Measures & Strategies	Tasks & Examples	Notes & Elaborations
	Keep a focus on climate change issues and actions through regular public comments by Governor and other public leaders.	•	•
	Develop and use a state-based "brand" on climate awareness and action.	•	•
	Develop & maintain a State climate change website for the public; maintain a web-based clearinghouse for climate change information and education resources.	• Link to scientific developments--what you can do, how you can help, what the state is doing, etc.	• Post annual progress reports on commitments, plan implementation, etc.
	Work with existing company outreach efforts to customers (e.g., utilities) to enhance awareness of climate change issues & actions.	• Retail advertising and/or "bill stuffers" • Environmental disclosure of electricity fuel mix/emissions; recycled content, etc. • Product messages (e.g., yogurt labels)	•
	Develop and provide concrete information on co-benefits to entities to use in boosting their climate efforts.	•	•
	Undertake a concerted planning effort to identify and address climate adaptation issues & needs in the State.	• ADEQ lead? • Multi-stakeholders?	•

CC-5 State Climate Change Adaptation Strategy

Policy Description:

Because of the build-up in the atmosphere of greenhouse gases that already has occurred, Arizona will experience the effects of climate change for years to come, even if immediate action is taken to reduce future GHG emissions. As such, it is essential that the state develop a strategy to identify and manage the projected impacts of on-going climate change.

Policy Design:

While taking action to reduce GHG emissions in Arizona, the CCAG recommends that a comprehensive state climate change adaptation strategy be developed and implemented. The strategy should include time- and program-based goals, characterization of the potential risks and costs of inaction, and the potential costs, benefits, and co-benefits associated with specific policy and program actions and time periods. Further, the strategy should outline actions to be taken to respond to existing climate change impacts and to coordinate these actions with response plans and efforts that are underway or may be contemplated at other agencies or organizations or through other initiatives. Such impacts include the concerns outlined by the Governor in her February 2005 Executive Order (e.g., prolonged drought, severe forest fires, warmer temperatures, increased snowmelt, and reduced snow pack) as well as other serious issues, including risks to public health.

The Governor may wish to consider appointing a task force or advisory group to develop recommendations for the state climate change adaptation strategy. Moreover, the Governor should direct state agencies and other appropriate institutions to identify and characterize potential current and future risks in Arizona to human, natural and economic systems, including potential risks to water resources, temperature sensitive populations and systems, energy systems, transportation systems, vital infrastructure and public facilities, and natural lands (e.g., forests, rangelands, and farmland).

Adaptation measures that also help mitigate GHG emissions should be given priority in the state climate change adaptation strategy, particularly water use conservation and efficiency, forest and agriculture conservation and management, energy production and use, facility siting and management (including residential), infrastructure development, and efficient transportation and land use systems. These actions should be linked to implementation of other specific recommendations of this Climate Change Advisory Group to the greatest extent possible.

Implementation Method(s):

- Information and education

Related Policies/Programs in Place:

No comprehensive State climate change adaptation strategy or plan is in place or underway in Arizona.

Type(s) of GHG Benefit(s):

Not applicable.

Estimated GHG Savings and Costs per tCO_2e:

Not applicable.

Data Sources, Methods, and Assumptions:

Not applicable.

Key Uncertainties:

Not applicable.

Ancillary Benefits and Costs:

Not applicable.

Feasibility Issues:

None cited.

Status of Group Approval:

Completed.

Level of Group Support:

Unanimous.

Barriers to Consensus:

None cited.

Implementation Method(s):

- Information and education

Related Policies/Programs in Place:

No comprehensive State climate change adaptation strategy or plan is in place or underway in Arizona.

Type(s) of GHG Benefit(s):

Not applicable.

Estimated GHG Savings and Costs per tCO_2e:

Not applicable.

Data Sources, Methods, and Assumptions:

Not applicable.

Key Uncertainties:

Not applicable.

Ancillary Benefits and Costs:

Not applicable.

Feasibility Issues:

None cited.

Status of Group Approval:

Completed.

Level of Group Support:

Unanimous.

Barriers to Consensus:

None cited.